



**BRIDGE ADVISORY**  
**Construction & Technology Division**  
**Bridge Operations Section**

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**BRIDGE ADVISORY NUMBER:** BA-2010-05

**DATE:** September 5, 2010

**SUBJECT:** Scour Critical Bridge Action Plan Form – Blank Form

**ISSUED BY:** MDOT Bridge Operations Engineer

**REVIEWED BY:** MDOT Scour Critical Bridge Committee

**Contact Information:** David Juntunen, Bridge Operations Engineer, 517-322-5688 or juntunend@michigan.gov

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A blank copy of the Scour Critical Bridge Action Plan form is available for field use. The form is attached to this Bridge Advisory and is available on MDOT's Bridge Operations website at the following link:

[http://www.michigan.gov/mdot/0,1607,7-151-9625\\_24768\\_24772---,00.html](http://www.michigan.gov/mdot/0,1607,7-151-9625_24768_24772---,00.html)

Although the field form is being provided for convenience, please be aware that the form must be filled out in the Michigan Bridge Inspection System (MBIS) and the "Preparation and implementation of the Scour Critical Bridge Action Plan form is complete" check box at the top of the electronic form is checked in order to meet agreement with FHWA for compliance..

The Michigan Bridge Inspection System (MBIS) is available at the following link:

[http://www.michigan.gov/mdot/0,1607,7-151-9625\\_24768---,00.html](http://www.michigan.gov/mdot/0,1607,7-151-9625_24768---,00.html)

Additional information about the "Preparation and implementation of the Scour Critical Bridge Action Plan form is complete" check box is available in MDOT Bridge Advisory 2009-03 which is available at the following link:

[http://www.michigan.gov/mdot/0,1607,7-151-9625\\_24768\\_49104---,00.html](http://www.michigan.gov/mdot/0,1607,7-151-9625_24768_49104---,00.html)

MICHIGAN DEPARTMENT OF TRANSPORTATION  
**SCOUR CRITICAL BRIDGE ACTION PLAN**

|                |          |                  |           |                  |                 |             |           |
|----------------|----------|------------------|-----------|------------------|-----------------|-------------|-----------|
| MDOT Bridge ID |          | Structure Number |           |                  | Control Section |             |           |
|                |          |                  |           |                  |                 |             |           |
| Facility       |          | Federal Struc ID |           | Last Modified By |                 | Agency Name |           |
|                |          |                  |           |                  |                 |             |           |
| Feature        | Location | Latitude         | Longitude | Insp Freq        | Insp Key        |             |           |
|                |          |                  |           |                  |                 |             |           |
| Length         | Width    | Year Built       | Yr Recon  | Br               | Type            | Scour Eval  | # of Pins |
|                |          |                  |           |                  |                 |             |           |

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|           |  |
|-----------|--|
| WaterShed |  |
|-----------|--|

|                                   |  |
|-----------------------------------|--|
| <b>Scour Vulnerability Rating</b> |  |
| Item 113 Rating & Description     |  |

**ABUTMENT A**

|                      |              |  |                |  |                |  |         |  |
|----------------------|--------------|--|----------------|--|----------------|--|---------|--|
| Foundation           | In Water     |  | Spread Footing |  | Piles Deep Fdn |  | Unknown |  |
| Foundation Soil Type | Non Cohesive |  | Cohesive       |  | Rock           |  | Unknown |  |

**ABUTMENT B**

|                      |              |  |                |  |                |  |         |  |
|----------------------|--------------|--|----------------|--|----------------|--|---------|--|
| Foundation           | In Water     |  | Spread Footing |  | Piles Deep Fdn |  | Unknown |  |
| Foundation Soil Type | Non Cohesive |  | Cohesive       |  | Rock           |  | Unknown |  |

|                       |  |
|-----------------------|--|
| Total Number of Piers |  |
| Comments              |  |
|                       |  |

|   |                |                |         |
|---|----------------|----------------|---------|
| Piers in water for 100 year event(by footing type)<br>(identify location i.e 1W,2S) | Spread Footing | Piles Deep Fdn | Unknown |
|   |                |                |         |

|                           |              |  |          |  |      |  |         |  |
|---------------------------|--------------|--|----------|--|------|--|---------|--|
| Pier Foundation Soil Type | Non Cohesive |  | Cohesive |  | Rock |  | Unknown |  |
|---------------------------|--------------|--|----------|--|------|--|---------|--|

|                                |
|--------------------------------|
| <b>OBSERVED SCOUR REPORTED</b> |
|                                |

|   |
|---|
| <b>SCOUR EVALUATION REPORT, EXECUTIVE SUMMARY</b> |
|   |

|                                   |         |         |          |
|-----------------------------------|---------|---------|----------|
| Scour Analysis Event Frequency    | 25 year | 50 year | 100 year |
| Anticipated Surface Elevation(ft) |         |         |          |
| Distance below bottom chord(ft)   |         |         |          |
| Anticipated Flow(cubic ft/sec)    |         |         |          |

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MDOT Bridge ID

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Control Section

|  |  |  |
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|                 |                         |                         |                    |
|-----------------|-------------------------|-------------------------|--------------------|
| <b>Facility</b> | <b>Federal Struc ID</b> | <b>Last Modified By</b> | <b>Agency Name</b> |
|-----------------|-------------------------|-------------------------|--------------------|

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|                |                 |                 |                  |                  |                 |
|----------------|-----------------|-----------------|------------------|------------------|-----------------|
| <b>Feature</b> | <b>Location</b> | <b>Latitude</b> | <b>Longitude</b> | <b>Insp Freq</b> | <b>Insp Key</b> |
|----------------|-----------------|-----------------|------------------|------------------|-----------------|

|  |  |  |  |  |  |
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|               |              |                   |                 |           |             |                   |                  |
|---------------|--------------|-------------------|-----------------|-----------|-------------|-------------------|------------------|
| <b>Length</b> | <b>Width</b> | <b>Year Built</b> | <b>Yr Recon</b> | <b>Br</b> | <b>Type</b> | <b>Scour Eval</b> | <b># of Pins</b> |
|---------------|--------------|-------------------|-----------------|-----------|-------------|-------------------|------------------|

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|--|--|--|--|--|--|--|--|
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**Bridge Inspection Coding Information**

|                                |  |
|--------------------------------|--|
| <b>Routine Inspection Date</b> |  |
|--------------------------------|--|

|                                    |  |
|------------------------------------|--|
| <b>Under Water Inspeccion Date</b> |  |
|------------------------------------|--|

|                                |  |
|--------------------------------|--|
| <b>Pontis Scour Smart Flag</b> |  |
|--------------------------------|--|

|                                  |  |
|----------------------------------|--|
| <b>Pontis Rip-Rap Smart Flag</b> |  |
|----------------------------------|--|

|                               |  |
|-------------------------------|--|
| <b>Item 71 Water Adequacy</b> |  |
|-------------------------------|--|

| Item | Rating (1 to 9) | Comments |
|------|-----------------|----------|
|------|-----------------|----------|

|                 |  |  |
|-----------------|--|--|
| <b>Abutment</b> |  |  |
|-----------------|--|--|

|              |  |  |
|--------------|--|--|
| <b>Piers</b> |  |  |
|--------------|--|--|

|                                   |  |  |
|-----------------------------------|--|--|
| <b>Item 61 Channel/Protection</b> |  |  |
|-----------------------------------|--|--|

|                                    |  |  |
|------------------------------------|--|--|
| <b>(MDOT) Culvert Scour Rating</b> |  |  |
|------------------------------------|--|--|

**Counter Measure Condition & Recommendation**

|                                  |
|----------------------------------|
| <b>Existing Counter Measures</b> |
|                                  |

|                                  |
|----------------------------------|
| <b>Inspector recommendations</b> |
|----------------------------------|

|                                      |  |
|--------------------------------------|--|
| <b>Counter Measures Not Feasible</b> |  |
|--------------------------------------|--|

|                 |  |
|-----------------|--|
| <b>Priority</b> |  |
|-----------------|--|

|                     |
|---------------------|
| <b>Explanation:</b> |
|                     |

**Monitoring Plan**

|                                     |  |
|-------------------------------------|--|
| <b>Routine Inspection Frequency</b> |  |
|-------------------------------------|--|

|   |  |
|---|--|
| <b>Under Water Inspection Frequency</b> |  |
|---|--|

**Cross Section Elevations**

|                        |
|------------------------|
| <b>Date Last Taken</b> |
|------------------------|

|                             |
|-----------------------------|
| <b>Frequency(in months)</b> |
|-----------------------------|

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|                 |                         |                         |                  |                    |                 |                   |                  |
|-----------------|-------------------------|-------------------------|------------------|--------------------|-----------------|-------------------|------------------|
|                 |                         |                         |                  |                    |                 |                   |                  |
| <b>Facility</b> | <b>Federal Struc ID</b> | <b>Last Modified By</b> |                  | <b>Agency Name</b> |                 |                   |                  |
|                 |                         |                         |                  |                    |                 |                   |                  |
| <b>Feature</b>  | <b>Location</b>         | <b>Latitude</b>         | <b>Longitude</b> | <b>Insp Freq</b>   | <b>Insp Key</b> |                   |                  |
|                 |                         |                         |                  |                    |                 |                   |                  |
| <b>Length</b>   | <b>Width</b>            | <b>Year Built</b>       | <b>Yr Recon</b>  | <b>Br</b>          | <b>Type</b>     | <b>Scour Eval</b> | <b># of Pins</b> |
|                 |                         |                         |                  |                    |                 |                   |                  |

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|                       |
|-----------------------|
| <b>Items to Watch</b> |
|                       |

|                                 |
|---------------------------------|
| <b>Fixed Monitoring Devices</b> |
| <b>Type of Instruments</b>      |
|                                 |
| <b>Installation Locations</b>   |

|   |
|---|
| <b>Agency Responsible For Monitoring During High Flow</b> |
|---|

|                                    |                     |                    |
|------------------------------------|---------------------|--------------------|
| <b>Responsible Agency Location</b> | <b>Phone Number</b> | <b>Cell Number</b> |
|                                    |                     |                    |

|  |
|--|
| <b>Flood Monitoring Resources</b>  |
| <b>NoAA Website</b> <a href="http://www.crh.noaa.gov/ahps2/">http://www.crh.noaa.gov/ahps2/</a> [Flows are shown in kcfs]  |
| <b>USGS Website</b> <a href="http://water.usgs.gov/cgi-bin/waterwatch?map_type=real&amp;state=mi">http://water.usgs.gov/cgi-bin/waterwatch?map_type=real&amp;state=mi</a> [Flows are shown in cfs] |

|   |
|---|
| <b>Initiate Monitoring when a flood warning is issued and/or when one or more of the following occurs</b> |
| 1. Structure will experience 25 year peak flow or more.   |
| 2. Structure is expected to have pressure flow.   |
| 3. History of whirlpools upstream or adjacent to sub-structure.   |
| 4. History of debris accumulation.  |
| 5. Known or existing scour holes.   |

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|                  |  |                         |  |                         |  |                    |  |
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|                  |  | null                    |  |                         |  |                    |  |
| <b>Facility</b>  |  | <b>Federal Struc ID</b> |  | <b>Last Modified By</b> |  | <b>Agency Name</b> |  |
|                  |  |                         |  | ENSER                   |  |                    |  |
| <b>Feature</b>   |  | <b>Location</b>         |  | <b>Latitude</b>         |  | <b>Longitude</b>   |  |
|                  |  |                         |  | null                    |  | null               |  |
| <b>Insp Freq</b> |  | <b>Insp Key</b>         |  |                         |  |                    |  |
|                  |  |                         |  |                         |  |                    |  |
| <b>Length</b>    |  | <b>Width</b>            |  | <b>Year Built</b>       |  | <b>Yr Recon</b>    |  |
|                  |  |                         |  |                         |  |                    |  |
| <b>Br</b>        |  | <b>Type</b>             |  | <b>Scour Eval</b>       |  | <b># of Pins</b>   |  |
|                  |  |                         |  |                         |  |                    |  |

|   |  |
|---|--|
| <b>Bridge Closure</b>                                       |  |
| <b>Conditions To Evaluate Bridge Closure</b>                |  |
| 1.Pressure Flow(water surface above bottom cord)            |  |
| 2.Observed whirlpools upstream and adjacent to substructure |  |
| 3.High Debris Accumulation                                  |  |
| 4.Settlement of abutment/piers                              |  |
| 5.Erosion of Roadway Embankment                             |  |
| 6.Other   |  |

|  |                     |                    |
|--|---------------------|--------------------|
| <b>Contact People For Bridge Closure</b> |                     |                    |
| <b>Name</b>                              | <b>Phone Number</b> | <b>Cell Number</b> |
|  |                     |                    |
|  |                     |                    |

|  |                     |                    |
|--|---------------------|--------------------|
| (For NHS bridges, notify FHWA if closure is more than eight hours) |                     |                    |
| <b>Contact For Re-Opening After Inspection</b>                     | <b>Phone Number</b> | <b>Cell Number</b> |
|  |                     |                    |

|   |
|---|
| <b>Detour Route</b>                               |
| Possible Detour Route(route number,from,to, etc.) |
|   |

|   |                  |                         |                     |
|---|------------------|-------------------------|---------------------|
| <b>Bridges/Culverts on Detour Route</b> |                  |                         |                     |
| <b>Detour Bridge Numbers</b>            | <b>Water Way</b> | <b>Load Limitations</b> | <b>Scour Rating</b> |
|   |                  |                         |                     |
|   |                  |                         |                     |
|   |                  |                         |                     |

|  |  |   |  |
|--|--|---|--|
| <b>Documentation Of High Flow Event</b>      |  |   |  |
| <b>Date Monitored</b>                        |  | <b>Time Monitored</b>                             |  |
|  |  | hr min  |  |
| <b>Storm Duration (hrs)</b>                  |  | <b>Estimated Total Rainfall (in)</b>              |  |
|  |  |   |  |
| <b>High Water Dst from Bottom Chord (ft)</b> |  | <b>Estimated USGS Flow Discharge (cu ft./sec)</b> |  |
|  |  |   |  |

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|                 |                         |                         |                    |
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| <b>Facility</b> | <b>Federal Struc ID</b> | <b>Last Modified By</b> | <b>Agency Name</b> |
|-----------------|-------------------------|-------------------------|--------------------|

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|                |                 |                 |                  |                  |                 |
|----------------|-----------------|-----------------|------------------|------------------|-----------------|
| <b>Feature</b> | <b>Location</b> | <b>Latitude</b> | <b>Longitude</b> | <b>Insp Freq</b> | <b>Insp Key</b> |
|----------------|-----------------|-----------------|------------------|------------------|-----------------|

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|               |              |                   |                 |           |             |                   |                  |
|---------------|--------------|-------------------|-----------------|-----------|-------------|-------------------|------------------|
| <b>Length</b> | <b>Width</b> | <b>Year Built</b> | <b>Yr Recon</b> | <b>Br</b> | <b>Type</b> | <b>Scour Eval</b> | <b># of Pins</b> |
|---------------|--------------|-------------------|-----------------|-----------|-------------|-------------------|------------------|

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|                            |
|----------------------------|
| <b>Whirlpools Observed</b> |
|                            |

|                            |
|----------------------------|
| <b>Debris Accumulation</b> |
|                            |

|                               |
|-------------------------------|
| <b>Action Taken / Closure</b> |
|                               |

|                 |
|-----------------|
| <b>Comments</b> |
|                 |